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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/927,043	08/09/2001	John Franklin Ebersole	16805-00035	4734
28534	7590	06/09/2005	EXAMINER	
BRIAN M. DINGMAN			MENGISTU, AMARE	
MIRICK, O'CONNELL, DEMALLIE & LOUGEE, LLP			ART UNIT	PAPER NUMBER
100 FRONT STREET				
WORCESTER, MA 01608			2673	

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/927,043	EBERSOLE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Amare Mengistu	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 22 July 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 5-30 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 5-10, 13, 14, 17 and 19-30 is/are rejected.
- 7) Claim(s) 11, 12, 15, 16 and 18 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. Claims 7,8,17,19, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Zhang (6,476,391)** in view of **Hirota et al (6,064,749)**.

As to claims 5,7,17,19-25,30 **Zhang** teaches an augmented reality display device comprising: a self contained breathing mask (fig.2)); a head mounted display (fig.1) and a head mounted camera (fig.1 (20), fig.2 (2a)) placed proximate the user's eye to minimized the distance between the user's eye, and placed on the optical axis of the user's eyes; the a see through head mounted display (col.2, lines 12-13,); a mirror to see the camera view point (fig.1 (32)) which is mounted on a mounting plate (fig.2 (32a)); a headphone (fig.1 (46)).

**Zhang** did not explicitly disclose having a motion tracker coupled to the mask, computer graphics rendered by a computer to be shown to the user, and displaying a computer graphics with the user's view of the real world on the HMD.

**Hirota et al** is cited to teaches that it is well known for a head up display (HUD) (fig.1 (20)) a motion tracker coupled to HUD/ camera to track the user field of view (fig.1 (26), col.5, lines 39-59), a computer graphics rendered by computer to be shown to the user, the computer graphics corresponding to the user's field of view as tracked by the motion tracker, so that the

graphics appear to be anchored in 3-D space (figs.1,8 (30), col.5, lines 60-66, col.6, lines 7-16, col.17, lines 40-42), a see through head mounted display (HMD) mounted in front of the user's eyes on which the computer graphics are displayed, to combine the computer graphics with the user's view of real world captured by a camera ( col.3, lines 56- col.4, lines 5col.6, lines 27-54).

Therefore, it would have been obvious to one skill in the art at the time of the invention was made to have been motivated to incorporate the method of combining the computer graphics the user's field of view as taught by **Hirota et al** into the device of **Zhang**, because this will provide a augmented reality and more particularly to registration of computer generated graphics to real world object or image of real world objects system that allows free movement of the user.

In regard to claim 8, **Zhang** teaches a headphone (fig.1 (40)), but did not specifically states that a shaft to connect to the headphone to the SCBA and use epoxy or other means to strengthen the shaft. It would have been obvious to one skill in the art to recognize that head phone of **Zhang** could be connected to the SCBA in order to make the headphone stable to the ear. However, this is an alternative to **Zhang's** headphone position. Further more, it would have been also obvious to one skill in the art to make the shafts of the headphones stronger in order to protect from braking.

3. Claims 5,20-30, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Zhang** (6,476,391) in view of **Hirota et al** (6,064,749) and **Amitai** (2003/0165017).

As to claims 20-25, 30 **Zhang** teaches an augmented reality display device comprising: a self contained breathing mask (fig.2)); a head mounted display (fig.1) and a head mounted

camera (fig.1 (20), fig.2 (2a)) placed proximate the user's eye to minimized the distance between the user's eye, and placed on the optical axis of the user's eyes; the a see though head mounted display (col.2, lines 12-13,); a mirror to see the camera view point (fig.1 (32)) which is mounted on a mounting plate (fig.2 (32a)); a headphone (fig.1 (46)).

**Zhang** did not explicitly disclose having a motion tracker coupled to the mask, computer graphics rendered by a computer to be shown to the user, and displaying a computer graphics with the user's view of the real world on the HMD.

**Hirota et al** is cited to teaches that it is well known for a head up display (HUD) (fig.1 (20)) a motion tracker coupled to HUD/ camera to track the user field of view (fig.1 (26), col.5, lines 39-59), a computer graphics rendered by computer to be shown to the user, the computer graphics corresponding to the user's field of view as tracked by the motion tracker, so that the graphics appear to be anchored in 3-D space (figs.1, 8 (30), col.5, lines 60-66, col.6, lines 7-16, col.17, lines 40-42), a see through head mounted display (HMD) mounted in front of the user's eyes on which the computer graphics are displayed, to combine the computer graphics with the user's view of real world captured by a camera ( col.3, lines 56- col.4, lines 5col.6, lines 27-54).

Therefore, it would have been obvious to one skill in the art at the time of the invention was made to have been motivated to incorporate the method of combining the computer graphics the user's field of view as taught by **Hirota et al** into the device of **Zhang**, because this will provide a augmented reality and more particularly to registration of computer generated graphics to real world object or image of real world objects system that allows free movement of the user.

**Zhang** as modified by **Hirota et al** did not explicitly disclose a non-see-through augmented reality display. However, **Amitai** suggests that it is conventional for HMD/HUD to have a see through and a non-see-through system (page 8 [0121]).

Therefore, it would have been obvious to one skill in the art at the time of the invention was made to have been motivated to incorporate the non-see-through augmented display of **Amitai** into the device of **Zhang**, because this is an alternative method of displaying an augmented reality.

As to claims 26-29, **Amitai** furthermore suggests the use of opaque layers in front of the optical element in order to block the user's field of view (see, page 8 [0121]).

4. Claims 6, 9,10, 13, 14 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over **Zhang** in view of **Hirota et al** further in view of **Arai et al (6,018,630)**.

As to claims 6,10, 13,14 and 17 **Zhang** as modified by **Hirota et al** teaches a head mounted display having a second camera to generate a stereoscopic view (col.3, lines 45-51, col.8, lines 55- col.9, lines 16). **Zhang** has failed to teach a mirror to set the camera viewpoint to more closely coincide with the wearer's eye position. **Arai et al** is cited to teach that it is conventional for a camera to have a mirror to set the viewpoint closely to the user's eye (see, Abstract; col.2, lines 26-34,49-63).

Therefore, it would have been obvious to one skill in the art at the time of the invention was made to have incorporated the use of mirror in camera as taught by **Arai et al** into the

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system of **Zhang**, since this will provide to position an image to near the observer's eye for a closely look of the image.

As to claim 9, **Zhang** as modified by **Arai et al** did not specifically rubber bumper placed around the mirror. However, it is well known to use some kind of protection around the mirror to prevent from damage.

#### *Allowable Subject Matter*

5. Claims 11,12,15,16,18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

#### *Response to Arguments*

6. Applicant's arguments filed July 22,2004 have been fully considered but they are not persuasive.

Applicant argues that **Zhang** does not disclose the followings:

- (1) Displaying computer graphic generated objects that correspond to real word or of any sort.
- (2) Does not need a motion tracker to maintain the proper camera field of view.

The Examiner strongly disagrees with applicant's assertion.

As to (1) **Zhang** does not teach displaying a computer graphic generated objects that corresponds to real word or of any sort. **Hirota et al** is the one, which cited to teach

displaying a computer graphic generated objects that corresponds to real word and not **Zhang** (see the new rejection above).

In regard to (2) **Zhang** does not need a motion tracker to maintain the proper camera field of view. The Examiner does not understand this statement by applicant. Here again **Zhang** is not the one, which cited to teach the motion tracker. **Hirota et al** is the one who teaches the motion tracker (see, the rejection above).

Applicants cannot show non-obviousness by attacking references individually where as here the rejections are based on combination of references. **In re Keller, 208 USPQ 871 (CCPA 1981).**

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amare Mengistu whose telephone number is (703) 305-4880. The examiner can normally be reached on M-F, T-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (703) 305-4938. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9600.

  
Amare Mengistu  
Primary Examiner  
Art Unit 2673

A.M  
June 3,2005